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Forestry Canada - Maritimes Region

TECHNICAL NOTE

PLANTATION PEST ASSESSMENT SURVEYS IN NEW BRUNSWICK

IN 1989

Multi-agency plantation pest assessment surveys have been carried out in New Brunswick since 1986. The objective of these assessments is to detect pest problems and to assess the level of damage. Continued increase in wood demand has led to an increase in the number of natural stands harvested, while a commitment to reforestation has led to an increase in the number of plantations. Tree growth and development are threatened by insects and diseases, which often cause growth loss. Regular plantation pest assessments provide information helpful to forest managers in protecting their investments.

The large and ever-increasing number of plantations has necessitated the involvement of a number of organizations to participate in plantation assessment. In 1989 the participating organizations were:

Canadian Pacific Forest Products Ltd.
- Miramichi Division (CPFP),
Consolidated Bathurst Inc. (CBI),
Fraser Inc. (Fras),
J.D. Irving Ltd. (JDI),
NBIP Forest Products Inc. (NBIP),
N.B. Dept. of Natural Resources and Energy (DNR),
Maritime Forest Ranger School (MFRS).

The Forest Insect and Disease Survey unit of Forestry Canada - Maritimes Region provided planning, training, co-ordination, identification services, analysis, and summary.

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PLANTATIONS ☐

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INSECTS AND DISEASES ■

Forestry Canada - Maritimes Region
P.O. Box 4000, Fredericton, N.B. E3B 5P7
P.O. Box 667, Truro, N.S. B2N 5E5
P.O. Box 190, Charlottetown, P.E.I. C1A 7K2

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Assessments included detailed examination of 50 trees in each of the plantations assessed. Trees were selected in subplots of five trees, each along a pre-determined line of travel through the plantation. The distance between subplots varied according to the size of the plantation to ensure good coverage and an adequate representation of conditions. Pest conditions encountered between subplots or off the line of travel were noted but not included in the calculations. Some of the plantations (15%) were assessed twice, which allowed detection of pests present during different times of the season.

Total number of plantations surveyed in 1989 was 274, an increase of 31% over last year. Of these, 187 were spruce, 69 were pine and 18 were of other species.

A total of 13 400 trees were assessed, 91% of which were reported as healthy. However, severe or moderate damage was found on at least some of the trees in 149 (54%) of the 274 plantations surveyed.

The results of the survey are presented here in a series of tables, organized to show the various conditions in the five DNR regions of New Brunswick.

R.A. Simpson
L.P. Magasi

Forest Insect and Disease Survey
Forestry Canada - Maritimes Region

April 1990

Table 14. Summary of plantation assessments by tree species and organization conducting assesments in the resource management regions of New Brunswick in 1989

Region	Tree species	Total plantations assessed	Organization						
			DNR	Fras	JDI	MFRS	CBI	Forcan	CPFP
1	Jack pine	10	8	1	-	-	1	-	-
	Balsam fir	1	1	-	-	-	-	-	-
	Black spruce	35	16	11	-	-	8	-	-
	White spruce	3	-	2	-	-	1	-	-
	Mixed Spruce	1	-	-	-	-	1	-	-
	Larch	2	1	1	-	-	-	-	-
Total for Region		52	26	15	0	0	11	0	0
2	Jack pine	6	6	-	-	-	-	-	-
	White pine	1	1	-	-	-	-	-	-
	Black spruce	10	8	1	-	-	-	1	-
	Mixed species	3	3	-	-	-	-	-	-
Total for Region		20	18	1	0	0	0	1	0
3	Jack pine	17	17	-	-	-	-	-	-
	Black spruce	11	11	-	-	-	-	-	-
	Spruce (unspec.)	4	4	-	-	-	-	-	-
	Mixed species	1	1	-	-	-	-	-	-
Total for Region		33	33	0	0	0	0	0	0
4	Jack pine	22	9	-	-	10	-	3	-
	Red pine	9	1	-	-	8	-	-	-
	White pine	2	-	-	-	2	-	-	-
	Black spruce	21	14	-	-	6	-	1	-
	Red spruce	1	-	-	-	-	-	-	1
	White spruce	2	2	-	-	-	-	-	-
	Mixed spruce	1	1	-	-	-	-	-	-
	Mixed species	4	4	-	-	-	-	-	-
	Larch	2	-	-	-	2	-	-	-
Total for Region		64	31	0	0	28	0	4	1
5	Jack pine	2	-	1	1	-	-	-	-
	Black spruce	72	4	48	20	-	-	-	-
	Norway spruce	1	-	-	1	-	-	-	-
	White spruce	24	2	10	12	-	-	-	-
	Mixed spruce	1	1	-	-	-	-	-	-
	Larch	5	-	5	-	-	-	-	-
Total for Region		105	7	64	34	0	0	0	
Total for New Brunswick		274	115	80	34	28	11	5	1

Table 2. Condition of pine and spruce trees by tree part in plantations

Region	Total no. of trees	NEEDLES Condition categories (%) Healthy	Trace	Light	Mod.	Sev.	BUDS Condition categories (%) Healthy	Trace	Light	Mod.	Sev.	SHOOTS Condition categories (%) Healthy	Trace	Light	Mod.	Sev.
Pine																
1	497	70.2	23.7	4.4	1.4	0.2	99.6	0.4	0.0	0.0	0.0	88.3	8.5	2.6	0.6	0.0
2	349	72.2	16.6	10.9	0.3	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
3	836	93.4	5.7	0.8	0.0	0.0	99.6	0.4	0.0	0.0	0.0	93.1	6.6	0.0	0.1	0.2
4	1644	49.7	43.0	4.6	2.1	0.6	98.3	1.6	0.1	0.0	0.0	92.2	7.4	0.4	0.0	0.1
5	100	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	90.0	1.0	7.0	2.0	0.0
PROVINCIAL AVERAGE		67.1	27.2	4.1	1.3	0.3	99.0	0.9	0.1	0.0	0.0	92.6	6.4	0.8	0.2	0.1
Spruce																
1	1934	90.2	9.3	0.5	0.1	0.0	86.3	12.3	1.1	0.2	0.1	83.2	9.8	6.0	1.1	0.0
2	447	100.0	0.0	0.0	0.0	0.0	96.6	2.9	0.2	0.2	0.0	97.5	0.2	2.0	0.2	0.0
3	731	94.1	4.5	1.2	0.1	0.0	99.6	0.0	0.4	0.0	0.0	92.9	6.8	0.3	0.0	0.0
4	1241	83.2	13.1	2.3	1.5	0.1	94.8	4.8	0.4	0.1	0.0	94.8	3.5	1.6	0.1	0.0
5	4729	96.9	0.8	2.0	0.3	0.0	67.2	7.7	18.5	5.7	0.9	74.7	5.8	16.6	2.2	0.7
PROVINCIAL AVERAGE		93.5	4.5	1.6	0.4	0.0	79.1	7.4	9.9	3.1	0.5	81.9	6.1	10.2	1.4	0.4
Other																
1	150	67.3	20.0	12.0	0.7	0.0	100.0	0.0	0.0	0.0	0.0	94.0	1.3	4.7	0.0	0.0
2	148	89.9	6.1	2.7	1.4	0.0	98.6	0.7	0.0	0.7	0.0	100.0	0.0	0.0	0.0	0.0
3	50	90.0	10.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
4	296	92.2	7.4	0.3	0.0	0.0	99.0	0.3	0.3	0.3	0.0	89.2	7.8	0.3	1.4	1.4
5	248	99.6	0.0	0.4	0.0	0.0	100.0	0.0	0.0	0.0	0.0	46.0	2.8	39.2	10.8	1.2
PROVINCIAL AVERAGE		89.6	7.4	2.7	0.3	0.0	99.4	0.2	0.1	0.2	0.0	80.3	3.6	11.9	3.5	0.8

sessed in New Brunswick in 1989.

BRANCHES					STEMS					LEADERS			ROOTS	
Condition categories (%)					Condition categories (%)					Condition categories (%)			Condition categories(%)	
althy	Trace	Light	Mod.	Sev.	Healthy	Trace	Light	Mod.	Sev.	Healthy	Damaged	Dead	Healthy	Damaged
84.3	9.9	5.4	0.4	0.0	96.8	2.6	0.4	0.2	0.1	88.3	11.7	0.0	99.0	1.0
97.1	1.7	1.1	0.0	0.0	98.3	0.6	0.0	0.6	0.6	93.7	6.0	0.3	99.7	0.3
80.1	16.5	2.6	0.7	0.0	92.9	2.6	3.3	1.1	0.0	96.4	3.1	0.5	91.4	8.6
87.7	9.6	1.2	0.2	1.3	92.9	5.2	0.2	0.5	1.2	97.7	2.0	0.2	99.5	0.5
68.0	0.0	21.0	8.0	3.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0
85.8	**10.2**	**2.7**	**0.6**	**0.7**	**94.2**	**3.6**	**1.0**	**0.6**	**0.6**	**95.7**	**4.0**	**0.3**	**97.5**	**2.5**
74.4	6.0	9.6	5.7	4.3	97.5	1.8	0.4	0.2	0.1	89.7	10.3	0.0	99.7	0.3
99.6	0.0	0.0	0.4	0.0	96.9	2.9	0.0	0.2	0.0	96.9	3.1	0.0	98.4	1.6
97.5	1.1	0.8	0.4	0.1	98.1	0.4	0.7	0.3	0.5	95.6	3.1	0.0	99.2	0.8
97.4	1.3	1.2	0.0	0.1	97.7	1.7	0.5	0.1	0.0	95.8	2.7	1.5	99.4	0.6
77.0	1.2	10.3	5.9	5.6	96.8	0.4	2.3	0.4	0.1	95.6	4.4	0.0	99.5	0.5
82.0	**2.2**	**7.6**	**4.3**	**3.9**	**97.2**	**1.0**	**1.4**	**0.3**	**0.1**	**94.4**	**5.4**	**0.2**	**99.4**	**0.6**
76.7	0.0	12.7	7.3	3.3	98.7	0.7	0.7	0.0	0.0	100.0	0.0	0.0	100.0	0.0
98.6	0.0	0.7	0.7	0.0	97.3	0.0	1.3	1.3	0.0	95.3	4.7	0.0	95.9	4.1
60.0	38.0	2.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0
84.1	9.8	1.0	3.0	2.0	80.7	6.8	1.4	5.7	5.4	91.6	5.7	2.7	100.0	0.0
60.0	0.0	19.6	11.6	8.8	96.0	0.4	0.4	0.4	2.8	91.2	8.8	0.0	100.0	0.0
77.2	**5.4**	**8.2**	**5.6**	**3.7**	**91.8**	**2.5**	**0.9**	**2.2**	**2.6**	**94.8**	**5.1**	**0.9**	**99.3**	**0.7**

Table 3. The condition of trees in plantations in New Brunswick and Nova Scotia in 1989

Province	Species	Tree Condition (%) Healthy	Fair	Poor	Dead
N.B.	Pine	93.3	4.3	1.7	0.7
	Spruce	90.9	6.2	1.1	1.8
	Other	85.9	10.2	3.2	0.7
	Average	90.9	6.9	2.0	1.1
N.S.*	Pine	88.9	5.7	2.0	3.4
	Spruce	92.7	4.4	1.4	1.5
	Other	84.0	6.0	10.0	0.0
	Average	91.6	4.8	1.7	1.9

*Does not include assessments conducted by Scott Worldwide Inc.

Table 4. Plantations with incidence of moderate or severe damage in the Maritimes in 1989

Province	Species	Number of plantations Assessed	With damage Mod.	Sev.
N.B.	Pine	69	18	9
	Spruce	187	33	75
	Other	18	5	9
	Total	274	56	93
N.S.*	Pine	14	6	4
	Spruce	42	10	7
	Other	1	0	0
	Total	57	16	11

*Does not include assessments conducted by Scott Worldwide Inc.

Table 5. Problems observed at the severe or moderate level during plantation pest assessment surveys in New Brunswick in 1989.

Problem	Number of plantations by region															
	Pine					Spruce					Other					
	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	
Animal	1	–	2	9	–	9	1	1	3	24	–	1	–	3	1	
Ant	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	
Aphid	1	–	–	1	1	–	–	–	–	4	–	–	–	–	3	
Armillaria root rot	–	–	2	2	–	1	1	1	1	7	–	–	–	–	–	
Bud midge	–	–	–	–	–	1	–	–	1	39	–	–	–	–	–	
Budworm	–	–	1	–	–	2	–	–	–	20	1	–	–	–	–	
Budmoth(s)	–	–	–	–	–	3	–	–	–	6	–	–	–	–	–	
Competition - Hardwood	–	–	3	–	–	5	–	–	3	19	1	–	–	–	–	
Softwood	–	–	–	–	–	12	1	1	–	39	1	–	–	–	4	
Herbaceous	1	–	–	–	1	1	–	–	–	5	–	–	–	–	–	
Unspec.	–	–	–	3	–	1	–	–	1	2	–	–	–	–	–	
Eastern spruce gall adelgid	–	–	–	–	–	–	–	–	–	–	–	–	–	1	–	
Frost	–	–	–	1	–	3	–	1	–	18	–	–	–	–	–	
Gall adelgid(s)	–	–	–	–	–	1	2	–	2	–	–	–	–	–	–	
Globose gall rust	–	–	1	1	–	–	–	–	–	–	–	–	–	–	–	
Jack pine aphid	–	–	–	–	1	–	–	–	–	–	–	–	–	–	–	
Mechanical	–	–	–	1	–	5	1	1	3	7	–	–	–	–	2	
Needle rust	3	–	–	5	–	–	–	1	1	1	–	–	–	–	–	
Northern pitch twig moth	–	–	2	2	–	–	–	–	–	–	–	–	–	–	–	
Planting	–	–	–	6	–	2	2	1	4	6	–	2	–	–	–	
Root collar weevil	–	–	–	2	1	–	–	2	–	–	–	–	–	–	–	
Sawfly	–	–	–	–	–	1	–	–	–	–	–	–	–	–	–	
Snow	–	1	1	4	–	–	–	1	–	–	–	–	–	–	–	
Spruce cone gall midge	–	–	–	–	–	–	–	–	1	–	–	–	–	–	–	
Weather	1	1	1	–	–	1	–	–	–	–	–	–	–	1	–	
Weevil (unspec.)	–	–	–	–	–	–	1	–	–	–	–	1	–	–	–	
White pine weevil	1	1	3	2	–	–	1	–	6	–	–	1	–	–	–	
Winter drying	–	–	–	–	–	–	–	–	2	–	–	–	–	–	–	
Miscellaneous	4	1	2	10	1	7	–	–	7	38	–	4	–	8	3	